

Soil Texture & Seed Germination Debrief

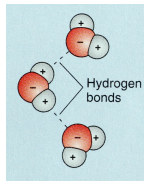
AP EnviSci 2/24/12

Soil Permeability

- **Soil texture** is the most important factor for nutrient and moisture availability. It is also a key factor in soil aeration which is a limiting factor for many desert plants.

Cohesion (p. 379)

- Cohesion is the attraction of liquid molecules to each other
- Cohesion
 - is caused by hydrogen bonds
 - results in the _____ shape of water droplets



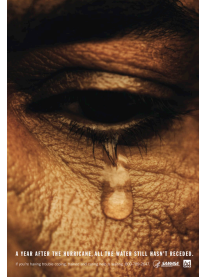
Surface Tension



- **Surface tension** is the tendency for liquids to decrease their surface area to the smallest size possible
 - This is **STRONG** for water!
- “Surfactants” (such as soap) **decrease** surface tension

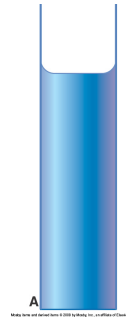
Adhesion (p. 379)

- Adhesion is the attraction of liquid molecules to solid surfaces
 - So, teardrops adhere to your face and leave a trail



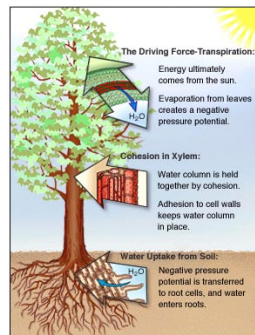
Capillary Action

- A combination of _____ and _____
- Water “wicks” itself up a narrow glass tube
 - a “capillary tube”
- This is what causes the meniscus



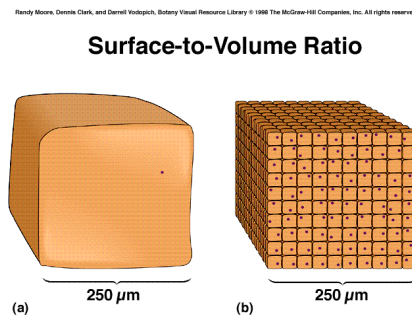
Application of capillary action:

- How do trees drink water?? The roots act like capillary tubes!
- Cohesion causes:
- Adhesion causes:

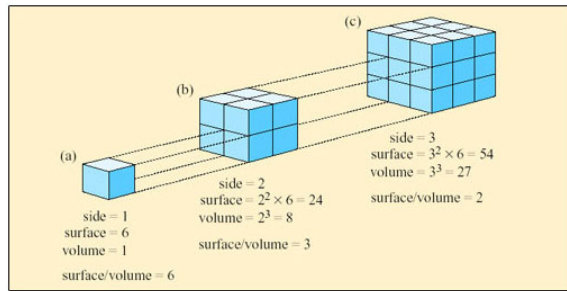


I. Surface area

- A. For a given weight of sample, the smaller the particle, the greater the surface area.



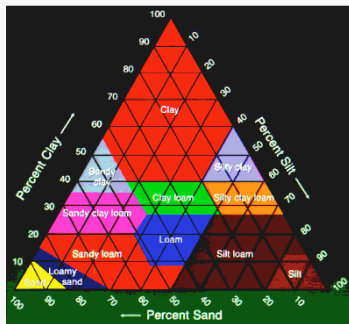
Surface area : Volume ratio
as sediment size



Connection to soil: **Water-holding capacity**

- ***The coarser the soil***
 - higher porosity & permeability
 - LOW SA : V
 - Water runs right through sandy soils; little is retained
- **The finer soils (more clay-rich) the more water it retains,**
 - HIGH SA : V, so...water is adhered to the many surfaces
 - Clay does not easily give it up to plants
- **Best soils for plants = LOAMS**
 - Relatively equal mixtures of all 3 sizes

Soil
Texture
Triangle
-Lab data
needed
-Percent by
weight of
fine earth
fraction



Exit ticket reflection

- Do your results make more sense knowing about SA : V and adhesion / cohesion? Why or why not?